MONTHLY WEATHER REVIEW

VOLUME 82

1954



U. S. DEPARTMENT OF COMMERCE · WEATHER BUREAU

REGULAR MONTHLY WEATHER SURVEY

Charts I-III and VI-XV in each issue of the Review, January to December, inclusive; Charts IV and V, A and B, in each issue January-March and November-December, inclusive:

Chart I. A. Average Temperature at Surface. B. Departure of Average Temperature from the Normal.

Chart II. Total Precipitation.

Chart III. A. Departure of Precipitation from Normal. B. Percentage of Normal Precipitation.

983 Chart IV. Total Snowfall.

SCIENCE

LIBRARY

Chart V. A. Percentage of Normal Snowfall. B. Depth of Snow on Ground.

Chart VI. A. Percentage of Sky Cover Between Sunrise and Sunset. B. Percentage of
Normal Sky Cover Between Sunrise and Sunset.

Chart VII. A. Percentage of Possible Sunshine. B. Percentage of Normal Sunshine. Chart VIII. Average Daily Values of Solar Radiation and Percentage of Normal.

1954 Chart IX. Tracks of Centers of Anticyclones at Sea Level.

Chart X. Tracks of Centers of Cyclones at Sea Level.

Chart XI. Average Sea Level Pressure and Surface Windroses. Departure of Average Pressure from Normal.

Chart XII. Average Dynamic Height and Average Temperature at 850-mb. Pressure Surface, and Resultant Winds at 1,500 Meters.

Chart XIII. Average Dynamic Height and Average Temperature at 700-mb. Pressure Surface, and Resultant Winds at 3,000 Meters.

Chart XIV. Average Dynamic Height and Average Temperature at 500-mb. Pressure Surface, and Resultant Winds at 5,000 Meters.

Chart XV. Average Dynamic Height and Average Temperature at 300-mb. Pressure Surface, and Resultant Winds at 10,000 Meters.

In addition to the Charts I-XV the survey consists of two monthly articles:

1. A discussion of the month's weather, including an interpretation of Charts I-XV in relation to mean circulation patterns of the Northern Hemisphere.

2. A discussion of an outstanding weather situation of the month, including an analysis and interpretation of the meteorological features shown by synoptic weather charts.

NOTICE

The Weather Bureau desires that the MONTHLY WEATHER REVIEW shall be a medium of publication for contributions within the field, but such publication is not to be construed as official approval of the views expressed.

CORRECTIONS

Volume 81:

p. 82: In column 2, in text beneath table 1, total March 1953 precipitation at Boston should be 11.00 in. instead of 11.69 as given. (This correction was inadvertently assigned to vol. 80 in the 1953 Index and is therefore repeated here.)

Volume 82:

Nos. 3 and 4: Charts IX and X, Tracks of Anticyclones and Cyclones for March 1954 were interchanged with Charts IX and X for April 1954. The tracks printed in the March 1954 issue are those for April; the March tracks appear in the April 1954 issue.

Chart VIII: Correct coordinates for the solar radiation equipment at Oak Ridge, Tenn., are 35° 55′ N., 84° 19′ W. Data for Oak Ridge were plotted about 140 miles too far northeast previous to the October chart.

p. 19: In the legends within figures 9a and 9b, lines WW should be keyed as $x \times x$ and lines WWW as $\bullet \bullet \bullet$.

p. 60: In paragraph 1, sentence 3 should read, "for the country as a whole the weighted temperature average was higher than for any previous February in the 62-year period of record."

SUBJECT AND AUTHOR INDEX OF THE MONTHLY WEATHER REVIEW, 1954, VOL. 82

ZHOZI RODITOA CIZA TORUBE

A

Alabama:

The great-volume rainstorm at Elba, Alabama. (7 figs.) George A. Lott. 153-159.

ALLEN, PHILIP W .:

and Vincent J. Creasi. Changes in the vertical mass distribution in the vicinity of the rapidly deepening Low of March 24-26, 1954. (10 figs.) 87-95.

Analysis of winter precipitation observations in the Cooperative Snow Investigations. (11 figs.) Walter T. Wilson. 183-199.

Anemograph:

An interesting anemograph record. (3 figs.) R. W. Schloemer and F. A. Flanders. 101–103.

Anticyclones:

The life history of a Great Basin anticyclone—An aerological analysis from a hemispheric point of view. (17 figs.) Robert B. Ross and Joseph Vederman. 378–391.

The weather and circulation of January 1954—A low index month with a pronounced blocking wave. (8 figs.) Arthur F. Krueger. 29–34.

The weather and circulation of June 1954—Illustrating the birth and growth of a continental anticyclone. (7 figs.) Joshua Z. Holland. 163–171

The weather and circulation of May 1954—A circulation reversal effected by a retrogressive anticyclone during an index cycle. (10 figs.) William H. Klein. 123–130.

APPLEBY, JAMES F .:

Trajectory methods of making short-range forecasts of differential temperature advection, instability, and moisture. (18 figs.) 320-334.

B

BREISTEIN, P. M.:

and H. Dean Parry. Some dynamical aspects of static stability. (4 figs.) 355-359.

BREWSTER, GEORGE F .:

Observation of two squall lines, August 16, 1954. (5 figs.) 245-247.

Bibliography of scientific papers written by I. F. Hand. 48-49.

C

CARLIN. ALBERT V.:

Meteorological charts in three dimensions. (5 figs.) 97-100.

CARSON, ROBE B.:

Some objective quantitative criteria for summer showers at Miami, Fla. (14 figs.) 9-28.

CHAMBERLAIN, L. W .:

and W. P. Nash. Some aspects of the heavy rains in the Chicago area, October, 9-11, 1954. (24 figs.) 305-316.

Changes in the vertical mass distribution in the vicinity of the rapidly deepening Low of March 24-26, 1954. (10 figs.) Philip W. Allen and Vincent J. Creasi. 87-95.

Climatology:

Effects of atomic explosions on the frequency of tornadoes in the United States. (12 figs.) D. Lee Harris. 360-370.

Statistics on the movement and deepening of cyclones in the Middle West. (10 figs.) John C, Hurley. 116-122.

Synoptic background for record April minimum temperature at First Connecticut Lake, N. H., April 4-5, 1954. (11 figs.) James K. McGuire and Edward Sable. 281-288.

The world-record 42-minute Holt, Missouri rainstorm. (13 figs.) George A. Lott. 50-59.

Clouds:

Observation of two squall lines, August 16, 1954. (5 figs.) George F. Brewster. 245-247.

COLLINS, G. O.:

and P. M. Kuhn. A generalized study of precipitation forecasting. Part 3: Computation of precipitation resulting from vertical velocities deduced from vorticity changes. (12 figs.) 173-182.

CREASI, VINCENT J .:

and Philip W. Allen. Changes in the vertical mass distribution in the vicinity of the rapidly deepening Low of March 24-26, 1954. (10 figs.) 87-95.

Cyclones:

Changes in the vertical mass distribution in the vicinity of the rapidly deepening Low of March 24–26, 1954. (10 figs.) Philip W. Allen and Vincent J. Creasi. 87–95.

Cyclogenesis in the Gulf States, January 1954 (16 figs.) L. P. Stark and D. A. Richter. 35-41.

Some fluctuations in the jet stream and tropopause associated with cyclonic development and movement, February 18-21, 1954. (16 figs.) Ralph P. James and George C. Holzworth. 64-72.

Cyclones-Continued

Statistics on the movement and deepening of cyclones in the Middle West. (10 figs.) John C. Hurley. 116–122.

The weather and circulation of December 1954—A month with a cyclonic polar vortex and fast westerlies at high latitudes. (4 figs.) Arthur F. Krueger. 374–377.

D

DAVIS, WALTER R.:

Hurricanes of 1954. (1 fig.) 371-374.

Degree days:

Normal degree days below any base. (1 fig.) H. C. S. Thom. 111-115.

The rational relationship between heating degree days and temperature. (3 figs.) H. C. S. Thom. 1-6.

District of Columbia:

The Washington, D. C. storm of June 26, 1954. (10 figs.) J. B. Holleyman. 200–208.

Drought:

The weather and circulation of July 1954—One of the hottest months on record in the central United States. (9 figs.) Harry F. Hawkins, Jr. 209–217.

The weather and circulation of March 1954—A cool March with a 6-day periodicity. (5 figs.) Harry F. Hawkins, Jr. 80-86.

Dust devil:

Pressure drop in a dust devil. (2 figs.) Roy E. Wyett. 7-8.

E

Effects of atomic explosions on the frequency of tornadoes in the United States. (12 figs.) D. Lee Harris. 360-370.

F

Fire weather:

Verification of "probability" fire-weather forecasts. Mark J. Schroeder. 257–260.

FLANDERS, F. A .:

and R. W. Schloemer. An interesting anemograph record. (3 figs.) 101-103.

Floods:

Severe floods of October 12-15, 1954 in Puerto Rico. (4 figs.) Ralph L. Higgs. 301-304.

Florida:

Estimation of friction of surface winds in the August 1949 Florida hurricane. (8 figs.) Russell E. Johnson. 73–79.

Some objective quantitative criteria for summer showers at Miami, Fla. (14 figs.) Robe B. Carson. 9–28.

Forecasting:

A generalized study of precipitation forecasting. Part 3: Computation of precipitation resulting from vertical velocities deduced from vorticity changes. (12 figs.) G. O. Collins and P. M. Kuhn. 173–182.

A possible quantitative use of mean circulation concepts in daily forecasting. (6 figs.) Donald

M. Hanson. 249-254.

Some objective quantitative criteria for summer showers at Miami, Fla. (14 figs.) Robe B. Carson. 9–28.

Trajectory method of making short-range forecasts of differential temperature advection, instability, and moisture. (18 figs.) James F. Appleby. 320-334.

Verification of "probability" fire-weather forecasts.

Mark J. Schroeder. 257-260.

FOSTER, D. S.:

and A. L. Sugg. Oklahoma tornadoes, May 1, 1954. (28 figs.) 131–140.

FOSTER, NORMAN B.:

and T. H. MacDonald. Pyrheliometer calibration program of the U. S. Weather Bureau. (2 figs.) 219–227.

FOSTER, ROBERT I.:

and Grover D. Hughes. The tropopause during a major change in circulation over the western United States, November 25 to 28, 1954. (16 figs.) 343-353.

C

General circulation:

The life history of a Great Basin anticyclone—An aerological analysis from a hemispheric point of view. (17 figs.) Robert B. Ross and Joseph Vederman. 378–391.

A possible quantitative use of mean circulation concepts in daily forecasting. (6 figs.) Donald M. Hanson. 249–254.

Some dynamical aspects of static stability. (4 figs.) P. M. Breistein and H. Dean Parry. 355–359.

The tropopause during a major change in circulation over the western United States, November 25 to 28, 1954. (16 figs.) Grover D. Hughes and Robert I. Foster. 343–353.

The weather and circulation of January 1954—A low index month with a pronounced blocking wave. (8 figs.) Arthur F. Krueger. 29-34.

The weather and circulation of February 1954—The warmest February on record for the United States. (4 figs.) Arthur F. Krueger. 60–63.

The weather and circulation of March 1954—A cool March with a 6-day periodicity. (5 figs.) Harry F. Hawkins, Jr. 80–86.

The weather and circulation of April 1954—A month with a confluent jet stream. (9 figs.) William H. Klein. 104–109.

General circulation—Continued

Science

g.

lg

V

1.

n

ld

er

3.

ts

у.

1.

n

2

n

6

n

t

h

n

d

),

n

5

The weather and circulation of May 1954—A circulation reversal effected by a retrogressive anticyclone during an index cycle. (10 figs.) William H. Klein. 123–130.

The weather and circulation of June 1954—Illustrating the birth and growth of a continental anticyclone. (7 figs.) Joshua Z. Holland. 163–171.

The weather and circulation of July 1954—One of the hottest months on record in the central United States. (9 figs.) Harry F. Hawkins, Jr. 209–217.

The weather and circulation of August 1954—Including a discussion of hurricane Carol in relation to the planetary wave pattern. (10 figs.) Jay S. Winston. 228–236.

The weather and circulation of September 1954. (6 figs.) Jay S. Winston. 261-266.

The weather and circulation of October 1954—Including a discussion of hurricane Hazel in relation to the large-scale circulation. (6 figs.) Arthur F. Krueger. 296-300.

The weather and circulation of November 1954—Including a study of some major circulation changes. (5 figs.) Harry F. Hawkins, Jr. 335-342.

The weather and circulation of December 1954—A month with a cyclonic polar vortex and fast westerlies at high latitudes. (4 figs.) Arthur F. Krueger. 374-377.

A generalized study of precipitation forecasting. Part 3: Computation of precipitation resulting from vertical velocities deduced from vorticity changes. (12 figs.) G. O. Collins and P. M. Kuhn, 173-182.

The great-volume rainstorm at Elba, Alabama. (7 figs.) George A. Lott. 153-159.

H vereintelement 18

HAMON, RUSSELL W.:

and Leonard L. Weiss and Walter T. Wilson. Insolation as an empirical function of daily sunshine duration. (6 figs.) 141-146.

HAND, I. F .:

Bibliography of scientific papers written by I. F. Hand. 48-49.

Methods of calculating solar radiation values at Blue Hill Observatory, Milton, Mass. (2 figs.) 43-47.

HAND, J. M .:

and J. B. Holleyman. The successive pressure jump lines of August 16, 1954. (9 figs.) 237-244.

HANSON, DONALD M.:

A possible quantitative use of mean circulation concepts in daily forecasting. (6 figs.) 249–254.

HARRIS, D. LEE:

Effects of atomic explosions on the frequency of tornadoes in the United States. (12 figs.)

HAWKINS, HARRY F., JR.:

The weather and circulation of July 1954—One of the hottest months on record in the central United States. (9 figs.) 209-217.

The weather and circulation of March 1954—A cool March with a 6-day periodicity. (5 figs.) 80-86.

The weather and circulation of November 1954— Including a study of some major circulation changes. (5 figs.) 335-342.

HIGGS, RALPH L.:

Severe floods of October 12-15, 1954, in Puerto Rico. (4 figs.) 301-304.

HOLLAND, JOSHUA Z.:

The weather and circulation of June 1954—Illustrating the birth and growth of a continental anticyclone. (7 figs.) 163-171.

HOLLEYMAN, J. B.: on low language and algolayed

The Washington, D. C., storm of June 26, 1954. (10 figs.) 200-208.

and J. M. Hand. The successive pressure jump lines of August 16, 1954. (9 figs.) 237-244.

HOLZWORTH, GEORGE C .:

and Ralph P. James. Some fluctuations in the jet stream and tropopause associated with cyclonic development and movement, February 18-21, 1954. (16 figs.) 64-72.

and William Malkin. Hurricane Edna, 1954. (14 figs.) 267-279.

HUGHES, GROVER D.:

and Robert I. Foster. The tropopause during a major change in circulation over the western United States, November 25 to 28, 1954. (16 figs.) 343-353.

HURLEY, JOHN C .:

Statistics on the movement and deepening of cyclones in the Middle West. (10 figs.) 116-122.

Hurricanes:

Estimation of friction of surface winds in the August 1949 Florida hurricane. (8 figs.) Russell E. Johnson. 73-79.

Hurricane Edna, 1954. (14 figs.) William Malkin and George C. Holzworth. 267-279.

Hurricanes of 1954. (1 fig.) Walter R. Davis. 371-374.

The weather and circulation of August 1954— Including a discussion of hurricane Carol in relation to the planetary wave pattern. (10 figs.) Jay S. Winston. 228–236.

The weather and circulation of October 1954— Including a discussion of hurricane Hazel in relation to the large-scale circulation. (6 figs.) Arthur F. Krueger. 296–300.

338886-55-2

I

Illinois

Some aspects of the heavy rains in the Chicago area, October 9-11, 1954. (24 figs.) W. P. Nash and L. W. Chamberlain. 305-316.

Insolation as an empirical function of daily sunshine duration. (6 figs.) Russell W. Hamon, Leonard L. Weiss, and Walter T. Wilson. 141-146.

Insolation in relation to cloud amount. J. Neumann. 317-319.

Instruments:

Pyrheliometer calibration program of the U. S. Weather Bureau. (2 figs.) T. H. MacDonald and Norman B. Foster. 219–227.

An interesting anemograph record. (3 figs.) R. W. Schloemer and F. A. Flanders. 101-103.

J

JAMES, RALPH P.:

and George C. Holzworth. Some fluctuations in the jet stream and tropopause associated with cyclonic development and movement, February 18-21, 1954. (16 figs.) 64-72.

Jet stream:

Some fluctuations in the jet stream and tropopause associated with cyclonic development and movement, February 18–21, 1954. (16 figs.) Ralph P. James and George C. Holzworth. 64–72.

The weather and circulation of April 1954—A month with a confluent jet stream. (9 figs.) William H. Klein. 104–109.

JOHNSON, RUSSELL E .:

Estimation of friction of surface winds in the August 1949 Florida hurricane. (8 figs.) 73-79.

K

KANGIESER, PAUL C .:

A physical explanation of the hollow structure of waterspout tubes. (8 figs.) 147-152.

KLEIN, WILLIAM H .:

The weather and circulation of April 1954—A month with a confluent jet stream. (9 figs.) 104-109.

The weather and circulation of May 1954—A circulation reversal effected by a retrogressive anticyclone during an index cycle. (10 figs.) 123–130.

KRUEGER, ARTHUR F .:

The weather and circulation of January 1954—A low index month with a pronounced blocking wave. (8 figs.) 29-34.

The weather and circulation of February 1954—The warmest February on record for the United States. (4 figs.) 60-63.

The weather and circulation of October 1954—Including a discussion of hurricane Hazel in relation to the large-scale circulation. (6 figs.) 296–300.

KRUEGER, ARTHUR F .- continued

The weather and circulation of December 1954—A month with a cyclonic polar vortex and fast westerlies in high latitudes. (4 figs.) 374–377.

KUHN, P. M .:

and G. O. Collins. A generalized study of precipitation forecasting. Part 3: Computation of precipitation resulting from vertical velocities deduced from vorticity changes. (12 figs.) 173-182.

T.

LOTT, GEORGE A.:

The great-volume rainstorm at Elba, Alabama. (7 figs.) 153-159.

The world-record 42-minute Holt, Missouri, rainstorm. (13 figs.) 50-59.

M

MacDonald, T. H.:

and Norman B. Foster. Pyrheliometer calibration program of the U. S. Weather Bureau. (2 figs.) 219-227.

MALKIN, WILLIAM:

and George C. Holzworth. Hurricane Edna, 1954. (14 figs.) 267-279.

Map-making:

Meteorological charts in three dimensions. (5 figs.) Albert V. Carlin. 97-100.

MCGUIRE, JAMES K .:

and Edward Sable. Synoptic background for record April minimum temperature at First Connecticut Lake, N. H., April 4-5, 1954. (11 figs.) 281-288.

Meteorological charts in three dimensions. (5 figs.)
Albert V. Carlin. 97-100.

Methods of calculating solar radiation values at Blue Hill Observatory, Milton, Mass. (2 figs.) I. F. Hand. 43-47.

Micrometeorology:

An interesting anemograph record. (3 figs.) R. W. Schloemer and F. A. Flanders. 101–103.

A surface study of a depression-type pressure wave. (12 figs.) D. T. Williams. 289-295.

Missouri:

The world-record 42-minute Holt, Missouri rainstorm. (13 figs.) George A. Lott. 50-59.

MOOK, CONRAD P .:

A preferred thickness line accompanying multiple tornado occurrences. (5 figs.) 160-162.

N

NASH, W. P.:

and L. W. Chamberlain. Some aspects of the heavy rains in the Chicago area, October 9-11, 1954. (24 figs.) 305-316.

NEUMANN, J.:

Insolation in relation to cloud amount. 317-319.

New Hampshire:

st

8-

-9

a.

1-

n

4.

.)

d

et

ì.

e

Synoptic background for record April minimum temperature at First Connecticut Lake, N. H., April 4-5, 1954. (11 figs.) James K. McGuire and Edward Sable. 281-288.

NEWSTEIN, HERMAN:

Tornado-pressure jump line situation of March 18, 1954. (3 figs.) 255-256.

Normal degree days below any base. (1 fig.) H. C. S. Thom. 111-115.

0

Observation of two squall lines, August 16, 1954. (5 figs.) George F. Brewster. 245-247.

Oklahoma tornadoes, May 1, 1954. (28 figs.) A. L. Sugg and D. S. Foster. 131-140.

PARRY, H. DEAN:

and P. M. Breistein. Some dynamical aspects of static stability. (4 figs.) 355-359.

Periodicities:

The weather and circulation of March 1954-A cool March with a 6-day periodicity. (5 figs.) Harry F. Hawkins, Jr. 80-86.

Persistence:

The weather and circulation of September 1954. (6 figs.) Jay S. Winston. 261-266.

A physical explanation of the hollow structure of waterspout tubes. (8 figs.) Paul C. Kangieser. 147-152.

A possible quantitative use of mean circulation concepts in daily forecasting. (6 figs.) Donald M. Hanson. 249-254.

Precipitation:

Analysis of winter precipitation observations in the Cooperative Snow Investigations. (11 figs.) Walter T. Wilson. 183-199.

A generalized study of precipitation forecasting. Part 3: Computation of precipitation resulting from vertical velocities deduced from vorticity changes. (12 figs.) G. O. Collins and P. M. Kuhn. 173-182.

The great-volume rainstorm at Elba, Alabama. (7 figs.) George A. Lott. 153-159.

Severe floods of October 12-15, 1954, in Puerto Rico. (4 figs.) Ralph L. Higgs. 301-304.

Some aspects of the heavy rains in the Chicago area October 9-11, 1954. (24 figs.) W. P. Nash and L. W. Chamberlain. 305-316.

Some objective quantitative criteria for summer showers at Miami, Fla. (14 figs.) Robe B. Carson, 9-28.

Trajectory method of making short-range forecasts of differential temperature advection, instability, and moisture. (18 figs.) James F. Appleby. 320-334.

Precipitation—Continued

The world-record 42-minute Holt, Missouri, rainstorm. (13 figs.) George A. Lott. 50-59.

A preferred thickness line accompanying multiple tornado occurrences. (5 figs.) Conrad P. Mook. 160-162. Pressure:

Pressure drop in a dust devil. (2 figs.) Roy E. Wvett. 7-8.

A surface study of a depression-type pressure wave. (12 figs.) D. T. Williams. 289-295.

Pressure jump lines:

Observation of two squall lines, August 16, 1954. (5 figs.) George F. Brewster. 345-347.

The successive pressure jump lines of August 16, 1954. (9 figs.) J. B. Holleyman and J. M. Hand. 237-244.

Tornado-pressure jump line situation of March 18, 1954. Herman Newstein. 255-256.

The Washington, D. C., storm of June 26, 1954. (10 figs.) J. B. Holleyman. 200-208.

Probability:

Verification of "probability" fire-weather forecasts. Mark J. Schroeder. 257-260.

Puerto Rico:

Severe floods of October 12-15, 1954, in Puerto Rico. (4 figs.) Ralph L. Higgs. 301-304.

Pyrheliometer calibration program of the U.S. Weather Bureau. (2 figs.) T. H. MacDonald and Norman B. Foster. 219-227.

R

Radiation, solar: Bibliography of scientific papers written by I. F. Hand. 48-49.

Insolation as an empirical function of daily sunshine duration. (6 figs.) Russell W. Hamon, Leonard L. Weiss, and Walter T. Wilson. 141-146.

Insolation in relation to cloud amount. J. Neumann. 317-319.

Methods of calculating solar radiation values at Blue Hill Observatory, Milton, Mass. (2 figs.) I. F. Hand. 43-47.

Pyrheliometer calibration program of the U.S. Weather Bureau. (2 figs.) T. H. MacDonald and Norman B. Foster. 219-227.

The rational relationship between heating degree days and temperature. (3 figs.) H. C. S. Thom. 1-6.

RICHTER, D. A .:

and L. P. Stark. Cyclogenesis in the Gulf States, January 1954. (16 figs.) 35-41.

ROSS, ROBERT B .:

and Joseph Vederman. The life history of a Great Basin anticylone-An aerological analysis from a hemispheric point of view. (17 figs.) 378-391. and James K. McGuire. Synoptic background for record April minimum temperature at First Connecticut Lake, N. H., April 4-5, 1954. (11 figs.) 281-288.

SCHLOEMER, R. W .:

and F. A. Flanders. An interesting anemograph record. (3 figs.) 101-103.

SCHROEDER, MARK J .:

Verification of "probability" fire-weather forecasts. 257-260.

Severe floods of October 12-15, 1954 in Puerto Rico. (4 figs.) Ralph L. Higgs. 301-304.

Snow:

Analysis of winter precipitation observations in the Cooperative Snow Investigations. (11 figs.)
Walter T. Wilson. 183-199.

Some aspects of the heavy rains in the Chicago area, October 9-11, 1954. (24 figs.) W. P. Nash and L. W. Chamberlain. 305-316.

Some dynamical aspects of static stability. (4 figs.) P. M. Breistein and H. Dean Parry. 355-359.

Some fluctuations in the jet stream and tropopause associated with cyclonic development and movement, February 18–21, 1954. (16 figs.) Ralph P. James and George C. Holzworth. 64–72.

Some objective quantitative criteria for summer showers at Miami, Fla. (14 figs.) Robe B. Carson. 9-28.

Squall lines:

Observation of two squall lines, August 16, 1954. (5 figs.) George F. Brewster. 245-247.

Stability:

Some dynamical aspects of static stability. (4 figs.) P. M. Breistein and H. Dean Parry. 355-359.

STARK, L. P.:

and D. A. Richter. Cyclogenesis in the Gulf States, January 1954. (16 figs.) 35-41.

Statistics on the movement and deepening of cyclones in the Middle West. (10 figs.) John C. Hurley. 116-122.

The successive pressure jump lines of August 16, 1954. (9 figs.) J. B. Holleyman and J. M. Hand. 237-244.

SUGG, A. L.:

and D. S. Foster. Oklahoma tornadoes, May 1, 1954. (28 figs.) 131-140.

Sunshine:

Insolation as an empirical function of daily sunshine duration. (6 figs.) Russell W. Hamon, Leonard L. Weiss, and Walter T. Wilson. 141-146.

A surface study of a depression-type pressure wave. (12 figs.) D. T. Williams. 289-295.

Synoptic background for record April minimum temperature at First Connecticut Lake, N. H., April 4–5, 1954. (11 figs.) James K. McGuire and Edward Sable. 281–288.

Temperature: / brown not brungstout sitgony?

Normal degree days below any base. (1 fig.) H. C. S. Thom. 111-115.

The rational relationship between heating degree days and temperature. (3 figs.) H. C. S. Thom. 1-6.

Synoptic background for record April minimum temperature at First Connecticut Lake, N. H., April 4-5, 1954. (11 figs.) James K. McGuire and Edward Sable. 281-288.

The weather and circulation of February 1954—The warmest February on record for the United States. (4 figs.) Arthur F. Krueger. 60-63.

The weather and circulation of July 1954—One of the hottest months on record in the central United States. (9 figs.) Harry F. Hawkins, Jr. 209-217.

The weather and circulation of March 1954—A cool March with a 6-day periodicity. (5 figs.) Harry F. Hawkins, Jr., 80–86.

тном, н. с. s.:

Normal degree days below any base. (1 fig.) 111-115.

The rational relationship between heating degree days and temperature. (3 figs.) 1-6.

Tornadoes:

Effects of atomic explosions on the frequency of tornadoes in the United States. (12 figs.) D. Lee Harris. 360-370.

Oklahoma tornadoes, May 1, 1954. (28 figs.) A. L. Sugg and D. S. Foster. 131–140.

A physical explanation of the hollow structure of waterspout tubes. (8 figs.) Paul C. Kangieser. 147-152.

A preferred thickness line accompanying multiple tornado occurrences. (5 figs.) Conrad P. Mook. 160-162.

Tornado-pressure jump line situation of March 18, 1954. Herman Newstein. 255-256.

Trajectory method of making short-range forecasts of differential temperature advection, instability, and moisture. (18 figs.) James F. Appleby. 320-334.

Trajectory method of making short-range forecasts of differential temperature advection, instability and moisture. (18 figs.) James F. Appleby. 320–334.

The tropopause during a major change in circulation over the western United States, November 25 to 28, 1954. (16 figs.) Grover D. Hughes and Robert I. Foster. 343-353.

V

Verification of "probability" fire-weather forecasts. Mark J. Schroeder. 257-260. Vorticity:

C.

cee

S.

m-

ril

ire

he

ed

63.

of

ral

ns,

ool

8.)

1-

ree

of

S.)

L.

of

ın-

ple

P.

18,

sts

il-

y.

of

nd

34.

rer

54.

er.

ırk

A generalized study of precipitation forecasting. Part 3: Computation of precipitation resulting from vertical velocities deduced from vorticity changes. (12 figs.) G. O. Collins and P. M. Kuhn. 173–182.

W

The Washington, D. C. storm of June 26, 1954. (10 figs.) J. B. Holleyman. 200-208.

Waterspouts:

A physical explanation of the hollow structure of waterspout tubes. (8 figs.) Paul C. Kangieser. 147-152.

Weather, U.S., 1954:

- Changes in the vertical mass distribution in the vicinity of the rapidly deepening Low of March 24–26, 1954. (10 figs.) Philip W. Allen and Vincent J. Creasi. 87–95.
- Cyclogenesis in the Gulf States, January 1954. (16 figs.) L. P. Stark and D. A. Richter. 35-41.
- Hurricane Edna, 1954. (14 figs.) William Malkin and George C. Holzworth. 267–279.
- Hurricanes of 1954. (1 fig.) Walter R. Davis. 371-374.
- The life history of a Great Basin anticyclone—An aerological analysis from a hemispheric point of view. (17 figs.) Robert B. Ross and Joseph Vederman. 378–391.
- Some aspects of the heavy rains in the Chicago area, October 9-11, 1954. (24 figs.) W. P. Nash and L. W. Chamberlain. 305-316.
- The successive pressure jump lines of August 16, 1954. (9 figs.) J. B. Holleyman and J. M. Hand. 237–244.
- Synoptic background for record April minimum temperature at First Connecticut Lake, N. H., April 4–5, 1954. (11 figs.) James K. McGuire and Edward Sable. 281–288.
- The Washington, D. C. storm of June 26, 1954. (10 figs.) J. B. Holleyman. 200–208.
- The weather and circulation of January 1954—A low index month with a pronounced blocking wave. (8 figs.) Arthur F. Krueger. 29–34.
- The weather and circulation of February 1954— The warmest February on record for the United States. (4 figs.) Arthur F. Krueger. 60–63.
- The weather and circulation of March 1954—A cool March with a 6-day periodicity. (5 figs.) Harry F. Hawkins, Jr. 80–86.

- Weather, U. S., 1954-Continued
 - The weather and circulation of April 1954—A month with a confluent jet stream. (9 figs.) William H. Klein. 104–109.
 - The weather and circulation of May 1954—A circulation reversal effected by a retrogressive anticyclone during an index cycle. (10 figs.) William H. Klein. 123–130.
 - The weather and circulation of June 1954—Illustrating the birth and growth of a continental anticyclone. (7 figs.) Joshua Z. Holland. 163–171.
 - The weather and circulation of July 1954—One of the hottest months on record in the central United States. (9 figs.) Harry F. Hawkins, Jr. 209–217.
 - The weather and circulation of August 1954—Including a discussion of hurricane Carol in relation to the planetary wave pattern. (10 figs.) Jay S. Winston. 228–236.
 - The weather and circulation of September 1954. (6 figs.) Jay S. Winston. 261-266.
 - The weather and circulation of October 1954—Including a discussion of hurricane Hazel in relation to the large-scale circulation. (6 figs.) Arthur F. Krueger. 296–300.
 - The weather and circulation of November 1954—Including a study of some major circulation changes. (5 figs.) Harry F. Hawkins, Jr. 335–342.
 - The weather and circulation of December 1954—A month with a cyclonic polar vortex and fast westerlies in high latitudes. (4 figs.) Arthur F. Krueger. 374–377.

WEISS, LEONARD L .:

and Russell W. Hamon and Walter T. Wilson. Insolation as an empirical function of daily sunshine duration. (6 figs.) 141-146.

WILLIAMS, D. T.:

A surface study of a depression-type pressure wave. (12 figs.) 289-295.

WILSON, WALTER T .:

- Analysis of winter precipitation observations in the Cooperative Snow Investigations. (11 figs.)
- and Russell W. Hamon and Leonard L. Weiss. Insolation as an empirical function of daily sunshine duration. (6 figs.) 141-146.

Wind:

Estimation of friction of surface winds in the August 1949 Florida hurricane. (8 figs.) Russell E. Johnson. 73-79. Wind-Continued

An interesting anemograph record. (3 figs.) R. W. Schloemer and F. A. Flanders. 101-103.

WINSTON, JAY S .:

The weather and circulation of August 1954—Including a discussion of hurricane Carol in relation to the planetary wave pattern. (10 figs.) 228–236.

The weather and circulation of September 1954. (6 figs.) 261-266.

The world-record 42-minute Holt, Missouri, rainstorm. (13 figs.) George A. Lott. 50-59.

WYETT, ROY E .:

Pressure drop in a dust devil. (2 figs.) 7-8.

7.

Zonal index:

The weather and circulation of January 1954—A low index month with a pronounced blocking wave. (8 figs.) Arthur F. Krueger. 29-34.

The weather and circulation of May 1954—A circulation reversal effected by a retrogressive anticyclone during an index cycle. (10 figs.) William H. Klein. 123–130.

